CLAIMS

1. A polyimide film, comprising polyimide whose imidization ratio ranges from 98% to 100% and satisfying an optical characteristic condition represented by the formula (1) below, wherein nx, ny and nz respectively indicate refractive indices in an X–axis direction, a Y–axis direction and a Z–axis direction in the polyimide film, with the X axis corresponding to an axial direction exhibiting a maximum refractive index within a surface of the polyimide film, the Y axis corresponding to an axial direction perpendicular to the X axis within the surface, and the Z axis corresponding to a thickness direction perpendicular to the X axis and the Y axis.

$$nx > ny > nz \qquad (1)$$

2. The polyimide film according to claim 1, wherein the polyimide is polyimide whose molecule contains a fluorine atom.

3. The polyimide film according to claim 1, wherein the polyimide is polyimide obtained by allowing 2,2-bis(3,4-dicarboxyphenyl)-hexafluoropropane dianhydride and 2,2-bis(trifluoromethyl)-4,4'-diaminobiphenyl to react so as to produce a polyamic acid and then imidizing the polyamic acid.

4. The polyimide film according to claim 1, wherein the polyimide has a weight–average molecular weight ranging from 50000 to 180000.

5. The polyimide film according to claim 1, which has a fracture strength of equal to or greater than 100 N/mm^2 under a measurement condition of a pulling speed of 5 m/min, a sample width of 10 mm and a chuck–to–chuck distance of 50 mm.

6. An optical film, comprising a polyimide layer formed of the polyimide film according to claim 1.

7. An optical element, whose one surface or both surfaces are laminated with the polyimide film according to claim 1 or the optical film according to claim 6.

8. An image display apparatus, comprising at least one of the polyimide film according to claim 1, the optical film according to claim 6 and the optical element according to claim 7.

9. A method for producing the polyimide film according to claim 1, comprising:

(A) the step of applying a solution of polyimide having an imidization ratio of 98% to 100% onto a plastic base and drying the solution, thus forming a polyimide coating; and

(B) the step of stretching the polyimide coating together with the plastic base so as to satisfy the formula (1) above.

10. The method according to claim 9, wherein the polyimide is polyimide whose molecule contains a fluorine atom.

11. The method according to claim 9, wherein the polyimide is polyimide obtained by allowing 2,2-bis(3,4-dicarboxyphenyl)-hexafluoropropane dianhydride and 2,2-bis(trifluoromethyl)-4,4'-diaminobiphenyl to react so as to produce a polyamic acid and then imidizing the polyamic acid.

12. The method according to claim 9, wherein a solvent of the polyimide solution has a solubility parameter ranging from 17 to 22 under a measurement condition of a pressure of 1 atmosphere and an atmospheric temperature of 25°C, with the solubility parameter being a value δ represented by the equation (2) below, wherein ΔH and V respectively indicate molar heat of vaporization and molar volume of the solvent.

$$\delta = (\Delta H/V)^{1/2} \qquad (2)$$

13. The method according to claim 9, wherein the temperature at which the polyimide solution is dried in the step (A) is equal to or lower than 200°C.

14. The method according to claim 9, wherein a solvent of the polyimide solution comprises at least one solvent selected from the group consisting of ester, ketone and ether.

15. The method according to claim 14, wherein the ester comprises at least one selected from the group consisting of ethyl acetate, propyl acetate, butyl acetate, isobutyl acetate, butyl propionate and caprolactone, the ketone comprises at least one selected from the group consisting of acetone, methyl ethyl ketone, methyl propyl ketone, methyl isopropyl ketone, methyl isobutyl ketone, diethyl ketone, cyclopentanone, cyclohexanone and methylcyclohexanone, and the ether comprises at least one selected from the group consisting of methyl ether (dimethyl ether), diethyl ether, dibutyl ether, dichloroethyl ether, furan, tetrahydrofuran, diphenyl ether, dibenzyl ether, ethylene glycol monoethyl ether, ethylene glycol butyl ether, propylene glycol methyl ether, diethylene glycol monobutyl ether and tripropylene glycol.

16. The method according to claim 9, wherein the plastic base comprises at least one selected from the group consisting of polyester, cellulose ester, polyolefin, substituted polyolefin, polycarbonate and polysulfone.

17. The method according to claim 16, wherein the polyester comprises at least one selected from the group consisting of polyethylene terephthalate, polyethylene isophthalate, 1,4-cyclohexanedimethylene terephthalate, polybutylene terephthalate and polyethylene naphthalate, the cellulose ester comprises at least one selected from the group consisting of triacetylcellulose, cellulose propionate and cellulose butyrate, the polyolefin comprises at least one selected from the group consisting of polynorbornene, polyethylene, polypropylene and polystyrene, the substituted polyolefin comprises at least one of isobutene–N-methylmaleimide copolymer and acrylonitrile–styrene copolymer, the polycarbonate comprises at least one selected from the group consisting of polycarbonate of bisphenol A, polycarbonate of bisphenol C (2,2-bis(4-hydroxyphenyl)-1,1-dichloroethylene), polycarbonate of alkylidenebisphenol and polycarbonate of cycloalkylidenebisphenol, the polysulfone comprises at least one selected from the group consisting of polyethersulfone, polyarylethersulfone, polyphenylsulfone and bisphenol A polysulfone.